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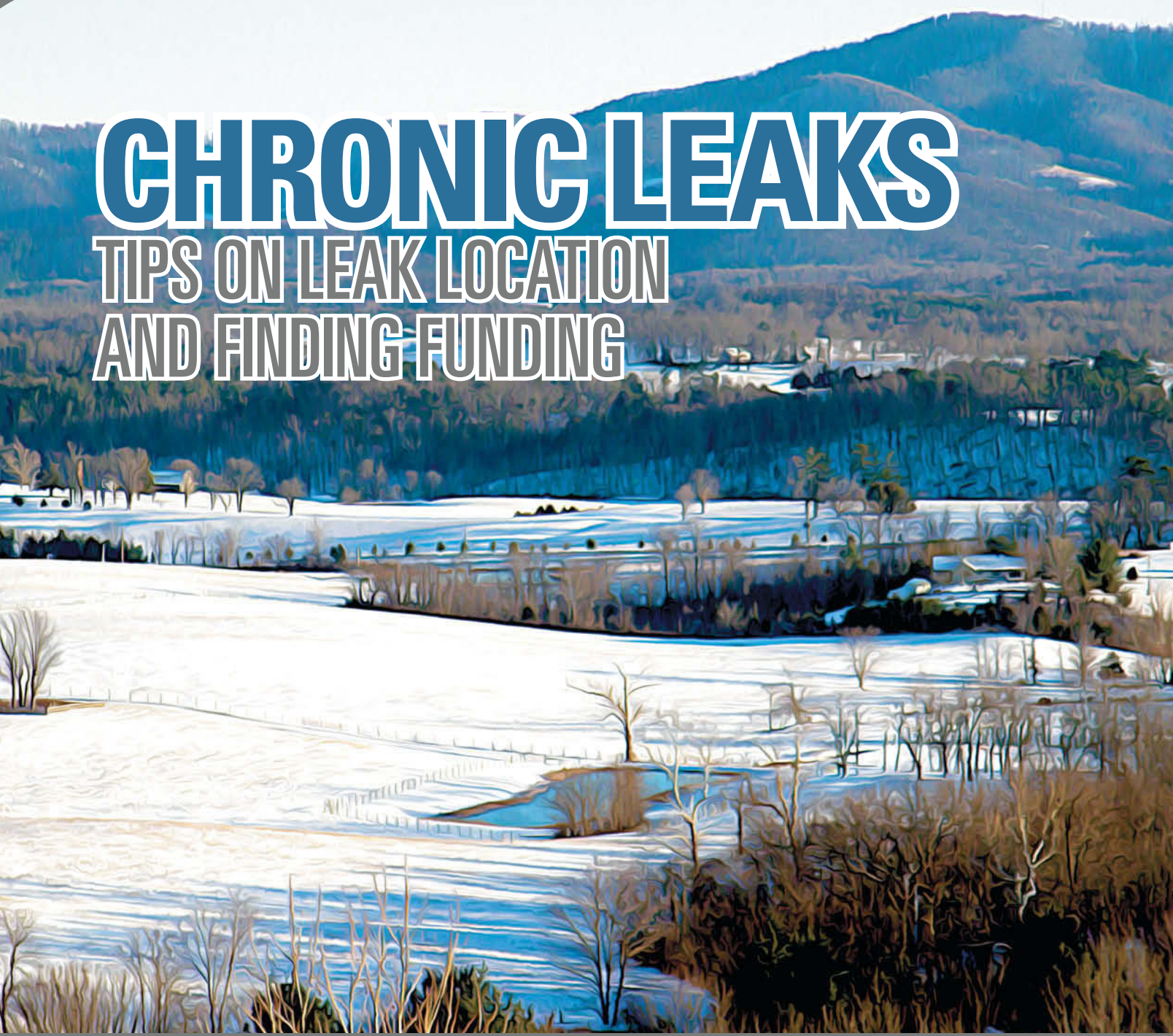
StreamLine



CHRONIC LEAKS

TIPS ON LEAK LOCATION AND FINDING FUNDING

ALSO INSIDE:

Finding Your Way • Emergencies • Hearing Protection • Coal • Rate Setting

Chronic Leaks
Tips on leak location and finding funding

BY ANTHONY HESS, MBA, SUSTAINABILITY COORDINATOR, VDH-OFFICE OF DRINKING WATER

FEW STRATEGIES EXIST for dealing with chronic leaks without sufficient funding. Most would agree that complete pipe replacement is the best strategy to eliminate chronic leaks. However, many utilities simply cannot afford the debt payments associated with replacement of all of their leaking pipes. Furthermore, grants for this purpose are scarce these days. Even if there is a possibility of grants, no utility should rely on the possibility of grant funds as their primary capital improvement funding plan. There is just no way to be certain that grants will be available, or if they will cover the full cost of the project. So what can utilities do in this situation? One strategy may be targeted replacement of the leakiest sub-sections of pipe. In determining just which sub-sections of pipe need to be replaced, a utility should use records of the location of previous pipe breaks, data from leak detection specialists, and information about the age and relative condition of pipe. Most engineers or contractors may not choose a project that replaces 1,000 feet of pipe here, 500 feet of pipe over there, and 350 feet of pipe somewhere else, etc. However, in some cases this may be just the right strategy to bring financial sustainability back to the utility.

Many large utilities would consider this type of project a routine operations and maintenance (O&M) task. They likely would use previous leak detection data to determine when to replace a short section of pipe versus installing a band on a pipe. Smaller utilities often do not have this luxury. Their O&M budget may be stretched just to afford equipment, labor, and the bands needed to repair leaks in the system. Some sections of chronically leaking pipes may have more bands than pipe. These smaller utilities may not even record the location of leaks. Often their leakage rates continue to increase until they have to replace entire sections of piping, not knowing whether or not there are some good sections in between the leaking ones. Many of these smaller utilities do not have capital replacement reserve savings that can be used for these pipe replacement projects. This leaves them looking for grant funds or loan/grant funding packages from funding agencies such as the Drinking Water State Revolving Fund (DWSRF) or the United States Department of Agriculture's (USDA) Rural Development (RD) program.

It is important to understand that utilities which historically propose replacement projects use sound logic when they suggest replacing an entire section of piping, instead of a dozen or so short leaking sub-sections throughout the distribution system. Projects that replace an entire section of piping work perfectly when the utility can afford the project. This was more often the case in the days when grant funds were more plentiful. However, the belt tightening that is facing utilities and their customers is also affecting those funding agencies that have historically financed these projects. Utilities should no longer count on a significant portion of grant funds for their capital replacement projects. Somehow, these utilities need to find a way to cover at least the majority

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portion of the debt payments that will be required to complete capital projects. This requires a shift of thinking about the types of projects small utilities consider. Instead of systematically replacing one lengthy section of pipe after another, it may be time to consider a project where multiple small sub-sections with high leakage rates are replaced.

In order to do this, utilities should start recording locational information about pipe repairs, then put this data on a map of their distribution piping to determine where chronically leaking sections of piping exist. I have seen one utility accomplish this task by using a paper map of their piping network on the wall, with push pins representing leaks. Others have used a hand held GPS units or smart phones to gather locational information for valves, hydrants, etc. and enter that information into mapping software to get a crude map of their distribution piping network. These utilities then collect GPS coordinates of pipe breaks and include this information on the map to help them understand where problem areas exist. Additional information that would aid this process includes data about pipe age, pipe material, pipe diameter, information from leak detection specialists, and (where available) information from leak detection data loggers. The most important asset a utility has in this process is the employee in the ditch who observes three previous repairs that already exist very close to the location of the leak.

After utilities have gathered this information, and have a good idea of the dozen or so small sub-sections of pipe that needs replacing, they may find themselves asking how to pay for the project. It is important that utilities work closely with their finance department to determine how much of an annual debt payment they can afford, and then work backward to determine the corresponding number of those leaking sub-sections of piping that they can afford to replace. We have already mentioned that utilities should plan only to complete projects that they can afford without the aid of grant funds. That way, if a funding agency does not award a percentage of grant funds, or principle forgiveness as the Drinking Water State Revolving Fund now calls it, the utility knows that they can still complete the project if they are offered a loan. In some cases, rates may need to be increased to cover the debt payments for such a project. It may be easier to justify to customers a much less expensive project, requiring a smaller rate increase, than the one replacing all of the piping.

We have already mentioned that many of these projects would be considered standard O&M for larger utilities. This is because replacing pipes "in kind," meaning same material, diameter, and location, may not involve the services of an engineer. However, funding agencies may require a Preliminary Engineering Report (PER) to accompany the funding application. Utilities can present their engineer with information about: how expensive a project they can afford, the type of project they are pursuing, and the complete information on the number of sub-sections of piping and their locations, pipe diameters, etc. This can help the consulting engineer prepare a project that the utility can afford, meet the application standards of their funding agency, and fit the utility's strategy for long term sustainability. There may yet be hope for those utilities that have chronic leaks and no money.